

**STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF ENVIRONMENTAL HEALTH  
SOLID WASTE PROGRAM  
555 CORDOVA STREET  
ANCHORAGE, ALASKA 99501**

**DRILLING WASTE DISPOSAL MONOFILL PERMIT  
MOQUAWKIE PROSPECT/LONE CREEK WELL NO. 3  
ANADARKO PETROLUEM CORPORATION**

Anadarko Petroleum Corporation  
**Permit No. 0023-BA005**

Page 1 of 17  
Date Issued: October 6, 2000

The Alaska Department of Environmental Conservation, Division of Environmental Health, Solid Waste Program, in accordance with the requirements of Alaska Statute 46.03, and the Alaska Administrative Code, Title 18, Chapters 15 and 60, as amended or revised and other applicable State laws and regulations, issues this Solid Waste Disposal Facility Permit to:

**Anadarko Petroleum Corporation  
17001 Northchase Drive  
P.O. Box 1330  
Houston, Texas 77251-1330**

For the management and operation of the Moquawkie Prospect/Lone Creek Well No. 3 drilling waste monofill in Section 36, Township 12 North, Range 12 West, Seward Meridian. This activity was reviewed under the Alaska Coastal Management Program (ACMP) and was determined to be consistent with the ACMP 6 AAC 80 on September 22, 2000. Operation of this drilling waste disposal facility is subject to the conditions of this permit.

This permit is effective upon issuance and expires **October 1, 2005** at which time this permit must be renewed or the facility closed. An application for permit renewal must be submitted at least 60 days before this permit expires (AS 46.03.110(a)). The Department may terminate or modify the permit in accordance with AS 46.03.120.

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Heather Stockard  
Solid Waste Program Manager

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Date

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## SPECIFIC CONDITIONS

### A. Application Compliance

1. This permit is based on the Drilling Waste Monofill Permit Application dated July 12, 2000. The Permittee must comply with the designs and plans in these application documents, unless modified in this permit. The Permittee may request a permit amendment in writing. A permit amendment will not become effective until authorized in writing by the Solid Waste Program Coordinator.
2. The permittee shall develop a solid waste management plan similar to that required under 18 AAC 60.205. The plan shall be submitted to the Department by December 1, 2001.

### B. Site Preparation

[18 AAC 60.240(a)]

#### 1. Signs

The Permittee shall:

install and maintain a readable sign at the monofill, which identifies the following information:

- a. name of the Permittee and the permit number;
- b. emergency telephone numbers;
- c. type of waste disposed of at the facility; and
- d. specify that general camp waste, hazardous and PCB wastes are prohibited.

#### 2. Fencing/Surface Use

[18 AAC 60.220]

The Permittee shall:

- a. install and maintain a fence around the drilling waste disposal facility to restrict access by unauthorized persons and wildlife if they become a problem or if requested by the Department.
- b. protect the land surface over the closed cell from any use that would compress or damage the gravel/soil cover or liner capping material. Heavy equipment may not be stored on or driven across any portion of a closed cell except to place the cover material.

3. Surface Water Quality Control [18 AAC 60.225, 18 AAC 60.430(c)]

The Permittee shall:

- a. construct and maintain diversion structures (ditches or berms) and surface grading as needed to prevent surface water from flowing over, into or through the disposal cell.
- b. control drainage from the facility to prevent a violation of the Water Quality Standards 18 AAC 70.

C. Disposal Cell Development [18 AAC 60.430(c)]

The Permittee shall:

1. ensure a minimum horizontal separation distance of 100 feet from a disposal cell to any surface water body or private drinking water well, and 500 feet to any public drinking water well.
2. ensure that the interior disposal cell walls are constructed no steeper than a slope of one foot horizontal to one foot vertical (1:1).
3. prepare the interior disposal cell walls and bottom of the disposal cell as specified by the liner's manufacturer.
4. in order to prevent the migration of pollutants from the facility, line the interior of each cell with a liner as described in the permit application.
5. ensure the liner is designed and installed in accordance with the manufactures' specifications and the integrity of the liner is maintained during all phases of construction, disposal and closure of the facility.
6. prior to placing drilling waste in the disposal cell provide documentation to the Department that the liner installation specifications have been satisfied; and
7. ensure the waste disposal cell liner is:
  - a. continuous over the pit side walls and bottom;
  - b. securely anchored to prevent slippage into the pit;

- c. designed and installed so that no erosion or other deterioration of the liner results from the placement of waste into the cell;
- d. protected from frost action damage, and other freeze/thaw effects; and
- e. resistant to, and compatible with, hydrocarbon and drilling mud waste.

D. Facility Operation

1. Waste Disposal

The Permittee shall:

- a. limit the disposal of polluted soil that is classified as RCRA non-hazardous waste and/or, drilling wastes ( RCRA exempt exploration and production wastes) associated with the exploration, development, and production of crude oil or natural gas, including drilling mud, cuttings, hydrocarbons, brine, acid, sand and emulsions or mixtures of fluids produced from and unique to the operation or maintenance of a well, whether naturally occurring or added for the operation or productivity of the well; drilling wastes include only wastes described in this paragraph which are derived intrinsically from primary field operations, produced from a well, and removed at the drill site or removed at a crude oil production facility by crude oil or waste water treatment process before custody transfer of the crude oil; drilling wastes do not include spent solvents and oils from equipment maintenance activities, discarded chemical products, or fuels.
- b. ensure that wastes are deposited in a manner that will not damage the impermeability of the liner, or otherwise jeopardize the integrity of the liner.

2. Temporary Closure of the Waste Cell.

The Permittee shall:

- a. Unless otherwise approved by the Department, ensure a temporary cover is applied to a waste disposal cell within 90 days:
  - i. after disposal cell capacity is reached;
  - ii. if a period of one (1) year has transpired since the last deposition of waste into the disposal cell; or

iii. if the disposal cell is not likely to receive waste within a one (1) year time period.

b. the temporary cover shall consist of an impermeable flexible membrane liner placed over the waste disposal cell in conjunction with fluid management to prevent the ponding of water on top of the temporary cap.

c. permanently close a temporarily closed disposal cell(s) in accordance with Section G of this permit. This permanent closure will occur when the facility is closed or the permit expires.

3. Fluid Management

The Permittee shall:

a. remove all pumpable liquids from the disposal cell as soon as possible to prevent overtopping of fluids and dispose of the liquids in accordance with all applicable state laws and regulations.

b. ensure that disposal cells maintain a minimum two (2) feet of freeboard at all times prior to closure of the cell.

4. Hazardous and Other Prohibited Waste

The Permittee shall:

a. prohibit the disposal of liquid petroleum products. Oily wastes (such as used oil filters, shop rags, and absorbents), municipal solid waste, prohibited chemical waste, radioactive material, solvents, corrosives, lead-acid batteries, polychlorinated biphenyl (PCB) fluids, explosives, and any other hazardous waste defined and regulated under 40 CFR 261 are prohibited at the disposal facility. Report all spills or discharges of hazardous substances that occur at facility as described in 18 AAC 75.

5. Prohibitions and Restrictions

[18 AAC 60]

The Permittee shall:

a. restrict the disposal of waste to only that which is approved.

- b. ensure that the lined disposal cell does not cause a discharge of pollutants to the surface of the land or into the waters of the State.

E. Monitoring

[18 AAC 60.800]

1. Visual Monitoring

The Permittee shall:

- a. ensure that a person who is familiar with the requirements of this permit and with the applicable requirements of the Solid Waste Management Regulations, 18 AAC 60, conduct a visual inspection of the waste disposal cells at least once per month while the monofill is open. A written record must be maintained of each inspection. These records must be made available to the Department upon request and must be kept in the operating record for the disposal facility.

This program will detect and document:

- i. damage or signs of potential damage to any component of the facility from, but not limited to; settlement, ponding, leakage, thermal instability, frost action, erosion, or operations at the facility;
  - ii. damage to the structural integrity of a containment structure, retaining wall, erosion control, or diversion structure;
  - iii. damage to the above-grade portions of ground water monitoring devices;
  - iv. any escape of waste, leachate, or any unauthorized waste disposal;
  - v. slippage of a waste disposal cell liner or damage to its anchor;
  - vi. signs of fire or combustion in the waste cell;
  - vii. evidence of death or stress to fish, wildlife, or vegetation that might be caused by the facility; and
  - viii. violations of permit conditions or requirements of 18 AAC 60
- b. upon noticing any permit violation or damage to the facility, immediately notify the ADEC, Solid Waste Program Office and initiate any corrective action

necessary.

2. Ground Water Monitoring [18 AAC 60.820, 18 AAC 60.830, 18 AAC 60.850]

The Permittee shall:

- a. prior to placement of waste in the monofill and as described in the *Monitoring Plan* in Attachment “J” of the July 12, 2000 permit application, unless otherwise modified by this permit, install groundwater quality monitoring wells one (1) through three (3) to establish ground water quality for each of the monitoring parameters listed in Appendix A.
- b. immediately after the installation and development of a monitoring well, collect at least four (4) independent samples from each newly installed monitoring well and analyze those samples for the parameters listed in Appendix A of this permit.
  - i. groundwater samples may be laboratory filtered for metals analysis only, provided the owner or operator demonstrates that hazardous constituents released from the solid waste will not be filtered out or volatilized by the filtration process.
- d. upon completion of seasonal groundwater monitoring, conduct detection monitoring in accordance with the ground water monitoring plan described in the *Monitoring Plan*, Attachment “J” to the permit application.
- e. conduct a statistical analysis of the ground water monitoring results and specify in the facility’s operating record the statistical methods to be used.
- f. ensure the monitoring well(s) are protected from damage, contamination and locked. Visually inspect each well before sampling is conducted to assess if the well is intact and has no indications of damage or aging that would compromise the sample quality.
- g. submit copies of all ground water monitoring test results, statistical analysis and visual inspection field notes for each monitoring well to the Department within thirty (30) days from receipt of the laboratory analyses of the samples.
- h. ensure that ground water samples are collected by a qualified sampler according to the Department approved Quality Assurance Program Plan (QAPP) or Quality Assurance/Quality Control Plan (QAQC) and; that groundwater monitoring procedures include sampling and analytical methods that accurately



measure hazardous constituents and other monitoring parameters in groundwater samples.

3. Assessment Monitoring and Corrective Action [18 AAC 60.810, 18 AAC 60.860]

The Permittee shall:

- a. at the request of the Department, sample and analyze any surface water and/or ground water if circumstances or evidence indicate that contamination has occurred.
- b. for purposes of this permit, contamination of surface and/or ground waters shall be deemed a violation when ground water and/or surface water contaminant levels exceed those levels specified in 18 AAC 70 (Water Quality Standards) except those parameters documented as having natural background levels already exceeding these limits. Indications of contamination may include, but are not limited to:
  - i. a sudden, abrupt, or significant increase in any one, or more, pollutants listed in Appendix A or 40 C.F. R Part 258, Appendix II, which are attributed to site operations.
  - ii. a determination that there is a statistically significant increase over background levels for one or more of the constituents monitored.
- c. submit copies of any assessment monitoring test results, to the Department within thirty (30) days from receipt of the laboratory analyses.
- d. if any violation of a permit condition, State regulation, structural damage to the facility, or a monitoring device is observed during visual monitoring or during a Department inspection, take appropriate corrective action to correct the violation or damage, prevent the escape of waste or leachate, and clean up any improper waste disposal.
- e. if contamination is indicated by the ground water monitoring program or contingency monitoring, the Permittee shall initiate corrective action as outlined in the Solid Waste Management Regulations, 18 AAC 60.820, perform all other actions deemed necessary by the Department for compliance with 18 AAC 60; and

- f. within 14 days after making the determination that ground water contamination has occurred, place a notice in the operating record indicating which constituents have statistically significant changes from background levels, and notify the department that this notice was placed in the operating record.
- 4. A drilling waste monofill must be closed as required by 18 AAC 60.440, or reconstructed to meet the standards of 18 AAC 60.430(c), within one year after detecting a violation of the water quality standards at the point of compliance.

F. Reporting and Record Keeping [18 AAC 60.235]

The Permittee shall:

- 1. maintain an operating record. The record must be retained at a location that is readily accessible for Department review and by employees working at the facility. The record must consist of:
  - a. the permit application and the permit;
  - b. inspection records, training procedures, and notification procedures if required by 18 AAC 60.240;
  - c. any demonstration, certification, finding, monitoring, testing, or analytical data required by 18 AAC 60.800 - 18 AAC 60.860;
  - d. any permit or record required under the Clean Water Act as that Act applies to leachate and storm water discharges;
  - e. financial assurance documentation;
  - f. the operating plan required in 18 AAC 60.210(b)(9);
  - g. as-built drawings of the drilling waste monofill facility; and
  - h. any other documents required by this chapter to be kept in the operating record.

G. Cell Closure [18 AAC 60.430]

The Permittee shall:

1. notify in writing, the Department's Anchorage Solid Waste Program at least thirty (30) days before the disposal cell is permanently closed.
2. ensure the closure activity is inspected by a third party, or supervised by the permittee or representative familiar with the closure requirements of the disposal cell. A written closure verification in the form of a notarized statement must be signed by the permittee and submitted to the Department within 30 days of the final closure action. This closure verification must include:
  - a. a statement verifying that the cell was closed in accordance with the cell closure requirements of this permit, the date(s) the capping and closure activity took place, and the signature(s) of person(s) who supervised or performed the closure activity certifying that the information provided is true.
3. ensure that all pumpable liquids are removed from the disposal cell and disposed of in accordance with all applicable state laws and regulations.
4. stabilize the waste material, as described in the facility closure plan and ensure that the contents of the disposal cell are of sufficient compressive strength to support a cap and maintain the proposed final cover design contour.
5. ensure that construction of the final cover system, as specified in the application, is completed within ninety (90) days after the last waste is deposited into each cell.
6. ensure the final cover/capping is at least 24 inches thick and composed of soil or another material approved by the department.
7. ensure that final cover material and drainage control structures are graded and maintained to prevent ponding and erosion of closed cells.
8. develop a vegetative cover within the first growing season after completion of final cover construction of each cell.

H. Disposal Facility Closure

The Permittee shall:

1. Upon completion of the monofill closure activities, complete the Verification of Closure Recording Document provided in Appendix B, within 180 days after final closure of the monofill. A survey as-built or record drawing showing the location of the waste cells and estimated volume of waste deposited must be recorded with the State Land Recorders

office. A copy of this recorded documentation must be submitted to the Department of Environmental Conservation, Solid Waste Program, Anchorage Office, at 555 Cordova Street, Anchorage, AK 99501.

I. Post-Closure Care and Monitoring

[18 AAC 60.800]

The Permittee shall:

1. maintain the integrity and effectiveness of the final cover, slopes, vegetative cover, and drainage structures, including making repairs as necessary to correct the effects of settlement, subsidence, ponding, erosion, frost action, or other events, and preventing run-on and runoff from eroding or otherwise damaging the final cover.
2. continue ground water monitoring and visual monitoring inspections annually, during the month of September, for five (5) years after the facility is closed, or longer if the Department determines that special circumstances require such monitoring.
3. submit a copy of the annual ground water monitoring and visual inspection reports to the Anchorage Solid Waste Program Office of the Department within thirty (30) days after receipt of laboratory analyses.
4. conduct an assessment monitoring and corrective action program, as specified in 18 AAC 60.860, if deemed necessary by the Department.

J. Violation and Enforcement

1. Noncompliance with any section of this permit constitutes a violation of the conditions of this permit.
2. Pollution, as defined in AS 46.03.900, from the operation of this facility constitutes a violation of this permit.
3. A violation of any condition of this permit may result in the imposition of civil and/or criminal penalties in accordance with AS 46.03.760 and AS 46.03.790. Additionally, the Permittee may be required to expand monitoring, evaluate impacts, and provide restoration at the site.

GENERAL CONDITIONS

A. Access and Inspection

The Department's representatives shall be allowed access to the Permittee's facilities to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit and State laws and regulations.

B. Availability of Records

Except for information related to confidential processes or methods of manufacture, all application materials and records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the Department's Southcentral Regional Office.

C. Location of Permit and Application

The Permittee shall maintain a copy of this permit and facility plans at the disposal facility or, if that is not feasible, at the Permittee's or operator's place of business.

D. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including but not limited to accidents, equipment breakdowns, or labor dispute.

E. Adverse Impacts

The Permittee shall take all necessary means to minimize any adverse impact to the receiving waters or lands resulting from a violation or noncompliance with any limitations specified in this permit, including any additional monitoring needed to determine the nature and impact of the activity in noncompliance. The Permittee shall cleanup and restore all areas adversely impacted by the noncompliance.

F. Cultural or Paleontological Resources

Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources are to be stopped, and the Office of History and Archaeology, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907) 269-8721.

G. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, nor does it authorize any damage to private property.

H. Modifications or Changes

This permit authorizes only that operation specified in the application and permit. Any alteration, installation, expansion or modification which was not submitted as a component of the permitted facility plan will require a written plan approval or permit amendment prior to implementation. Any expansion, modification, or other change in a facility process or operation which may result in an increase in emissions or discharges or may cause other detrimental environmental impacts from the Permittee's facility requires a new permit.

I. Applications for Permit Renewal, Amendment or Plan Approval

Application for a renewal of, or amendment to, a permit will be treated in the same manner as the initial application, except that public notice or hearing may not be required for applications for renewal or amendment. Application for renewal or amendment or plan approval must be made no later than 30 days before the expiration of the permit or the planned effective date of the amendment or change.

J. Transfers

This Department reserves the sole discretion to transfer this permit. The Permittee may request to transfer this permit to another proposed Permittee. The written request must include a certified, signed affidavit from the proposed new Permittee stating that they accept this permit in its entirety. The permittee is responsible to insure that all terms and conditions of the permit are met until the transfer is approved. Transfer of the permit is only valid when written approval has been received from the department. Should operation of the facility be contracted or a change in contractors be made, the new contractor shall be notified of the existence of the permit and its conditions.

K. Termination

This permit terminates upon the expiration date. The Department has the authority to terminate a permit upon 30 days written notice if the Department finds that there has been a violation of the conditions of the permit.

L. Pollution Prevention

In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the Permittee shall consider the following order of priority options, as outlined in AS 46.06.021:

1. waste source reduction;
2. recycling of waste;
3. waste treatment; and
4. waste disposal

## APPENDIX A GROUND WATER MONITORING PARAMETERS

| Matrix | Analyses  | Parameters   | Maximum Allowable Concentration  | Method   | Comments  |
|--------|---|--|--|--|---|
| Water  | pH<br>conductivity<br>temperature<br>turbidity<br>water level |  |  | Field Tests  |   |
| Water  | metals  | Arsenic(As)<br>Barium(Ba)<br>Calcium(Ca)<br>Chromium(Cr)<br>Lead(Pb)<br>Magnesium(Mg)<br>Nickel(Ni)<br>Sodium(Na)<br>Mercury(Hg)<br>Zinc(Zn) | 0.05 mg/L<br>2.0 mg/L<br>N/A*<br>0.1 mg/L<br>0.015 mg/L***<br>NA*<br>0.1<br>250.0 mg/L<br>0.002mg/L<br>5.0 mg/L. | EPA series 6010 or 7000A<br><br><br><br><br><br><br><br>(Hg) may be analyzed by any EPA approved method which meets detection requirements | Digestion method may be any approved EPA method for total recoverable metals. |
| Water  | diesel range organics   | C <sub>10</sub> -C <sub>28</sub> Organics  | 1.0 mg/L**   | AK102  |   |
| Water  | volatile aromatic compounds                                   | BTEX<br>benzene<br>toluene ethylbenzene<br>isomers of xylene<br>(para, meta, ortho xylene)]  | 0.005mg/L<br>0.7 mg/L<br>1.0 mg/L<br>10.0 mg/L   | EPA 8020 or equivalent   |   |

\* Calcium and Magnesium are used to calculate hardness and have no state numerical value.

\*\* There is no federal or state MCL standard for DRO. This value is presented as an indication of possible ground water contamination. Assessment monitoring, corrective action, or a risk-based assessment may be necessary to further assess possible ground water contamination.

\*\*\*EPA series 7000A furnace method, having a detection limit of 1ppb must be used for lead analysis.



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**APPENDIX B**  
**VERIFICATION OF DRILLING WASTE MONOFILL**  
**CLOSURE RECORDING DOCUMENTATION**

Pursuant to 18 AAC 60.490 \_\_\_\_\_, hereby gives  
[Print Owner or Operator's Name]

notice that the property located at \_\_\_\_\_ situated in  
[Legal Description]

the \_\_\_\_\_ recording district(s) was used as a

Drilling Waste Monofill, as defined in 18 AAC 60.990. The landfill closure activities were

completed in accordance with the requirements of 18 AAC 60.490 on \_\_\_\_\_  
[Date]

under the supervision of \_\_\_\_\_.  
[Print Name of Owner or Owner's Contractor]

**NOTE:**

Use of the property is restricted at the closed landfill waste disposal area (18AAC60.990(67)) in order to maintain the integrity and effectiveness of the final cap and cover material. The Undersigned attests that the above information is complete and true to the best of their knowledge. This document must be notarized or stamped by a registered Professional Engineer and recorded with a state land records office.

\_\_\_\_\_ Date: \_\_\_\_\_  
[Original Signature of Owner or Operator]

Printed Name/Title: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

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Upon completion of landfill closure activities, this document must be filled out, signed, notarized and recorded (with a State Land Records Office) within 180 days after final closure of the landfill. A survey as-built or record drawing showing the location of the waste cells and estimated volume of waste deposited must also be recorded with the State Land Records Office. A copy of this recorded documentation must be submitted to the Department of Environmental Conservation, Solid Waste Program, Anchorage Office, at 555 Cordova Street, Anchorage, AK 99501.